BELLEVUE COLLEGE

Engineering Transfer Advising Guide

July 2009

The engineering program at Bellevue College is designed for students pursuing a four year bachelors degree in engineering. The curriculum offered at Bellevue College will allow a student to fulfill pre-major requirements. Requirements vary depending on the engineering discipline that one plans to study. In designing a program at Bellevue College, information should be obtained from the four year institution that one plans to transfer to; including pre-major requirements from the specific engineering department that one is interested in.

Designing a Program of Study

Math and English

The first step in planning your program is to determine the appropriate placement in Mathematics and English. An assessment test is required or transcript documentation is required for all courses leading up to, and including, MATH& 151 (Calculus I), and for ENGL& 101 (English Composition I). Contact the Assessment Office (Room B132 - Phone:425-564-2243) to schedule an assessment testing session.

Science and Engineering

In selecting science and engineering courses, it is important to refer to the pre-major requirements of the four year institution engineering department. Engineering courses are selected to meet engineering department requirements. Preparatory science classes are available for students without any previous exposure to the sciences.

Humanities and Social Science

Courses should be selected so as to be transferable to the four year institution.

Evening Courses

Many courses in the Engineering Transfer Program are available in the evening. However, the availability of evening courses is more limited than during the day; thus, careful planning and scheduling of an evening program is vital. Projected course availability information is located at the end of this document.

More Info

For more information about Engineering or to schedule an advising appointment:

- **Engineering Transfer Website http://scidiv.bellevuecollege.edu/engr/**
- **Bellevue College Science Division Office ..... (425)-564-2321**
- **Engineering Transfer Program Chair..... (425)-564-2856**
- **Mail: Engr. Transfer – 3000 Landerholm Circle – Bellevue, WA 98007**

Bellevue College - Associate in Science – Track II Degrees

[Official Associate Degree requirements available at http://bellevuecollege.edu/worksheets/transfer/]

Associate in Science Track II: Engineering (90 credits)	
DEGREE REQUIREMENTS Written Communication Skills (5 Credits) English Composition Mathematics Skills (10 Credits) MATH& 151 (5cr) Calculus I MATH& 152 (5cr) Calculus II Humanities/Social Science (15 Credits) (at least 5 credits from each area) Chemistry Lab (5-6 Credits) CHEM& 161 (6cr) General Chemistry I	Physics Sequence (15-18 Credits) PHYS 121 (6cr) General Physics I PHYS 122 (6cr) General Physics II PHYS 123 (6cr) General Physics III Additional Math (5 Credits) MATH& 153 (5cr) Calculus III ELECTIVES [Sufficient credits to meet minimum degree total of 90]

The above Associate in Science Track II Degree is a broad useful degree that fits many engineering fields.

The following Major Related Program (MRP) Associate in Science Track II Degrees are designed for specific engineering disciplines and consequently have course requirements beyond the regular Associate in Science Track II Degree. The MRP Track II Degrees will allow students to transfer up to 110 applicable credits to a Washington state four year institution.

Associate in Science Track II: CIVIL and MECHANICAL Engineering MRP (90~106 credits)	
DEGREE REQUIREMENTS Same mandatory courses of the Associate in Science Track II with the following **additional** courses: MATH 208 (5cr) Linear Algebra MATH 238 (5cr) Differential Equations CHEM& 162 (6cr) General Chemistry II ENGR& 114 (4cr) Engineering Graphics ENGR& 214 (4cr) Statics ENGR& 225 (4cr) Mechanics of Materials ENGR& 215 (4cr) Dynamics	ADDITIONAL ENGINEERING, MATH AND SCIENCE [Select **two** courses from the following:] ENGR 111 (3cr) Engineering Problems ENGR 200 (3cr) CAD I ENGR& 204 (4cr) Electrical Circuits ENGR& 224 (4cr) Thermodynamics ENGL& 235 (5cr) Technical Writing MATH& 254 (5cr) Calculus IV

Associate in Science Track II: ELECTRICAL and COMPUTER Engineering MRP (90~108 credits)	
DEGREE REQUIREMENTS Same mandatory courses of the Associate in Science Track II with the following **additional** courses: MATH 208 (5cr) Linear Algebra MATH 238 (5cr) Differential Equations ENGR& 214 (4cr) Statics ENGR& 204 (4cr) Electrical Circuits CS211 (5cr) Computer Science II	ADDITIONAL ENGINEERING, MATH AND SCIENCE [Select **three** courses from the following:] ENGR 111 (3cr) Engineering Problems ENGR& 224 (4cr) Thermodynamics ENGL& 235 (5cr) Technical Writing BIOL& 211 (6cr) Biology Majors I MATH& 254 (5cr) Calculus IV

Associate in Science Track II: CHEMICAL and BIO Engineering MRP (90~105 credits)	
DEGREE REQUIREMENTS Same mandatory courses of the Associate in Science Track II with the following **additional** courses: MATH 238 (5cr) Differential Equations CHEM& 162 (6cr) General Chemistry II CHEM& 163 (6cr) General Chemistry III CHEM& 261 (6cr) Organic Chemistry I CHEM& 262 (6cr) or BIOL& 211 (6cr)	ADDITIONAL ENGINEERING, MATH AND SCIENCE [Select **two** courses from the following:] ENGR& 204 (4cr) Electrical Circuits ENGR& 224 (4cr) Thermodynamics ENGL& 235 (5cr) Technical Writing BIOL& 211, BIOL& 212, CHEM& 262 MATH 208, MATH& 254

Common Course Numbering Bulletin

Effective beginning in the 2008-2009 Academic year, Bellevue College implemented a change to course numbering. Common Course Numbering (CCN) is a new program that makes commonly shared courses among Washington community and technical colleges have the same course number and title.

Courses that are part of CCN will be indicated by the & character.
For example: ENGR& 214 Statics, replaces the previous course ENGR 210 Statics.
ENGL& 235 Technical Writing, replaces the previous course ENGL 270 Report Writing.

Important Note: there is no change to course content or to any existing course transferability to other universities.
For more information about CCN go to: http://www.bellevuecollege/ccn/

Bellevue College - Engineering Transfer Advising Specifics*

Advising notes for University of Washington (UW) and Washington State University (WSU):
[Note: BCC and UW are on quarters, WSU on semesters.]

MATHEMATICS:
Preparatory Math sequence:
MATH 098 -> 099 -> MATH& 141 -> 142 -> 151

(UW)
MATH& 151 transfers to UW as MATH 124
MATH& 152 transfers to UW as MATH 125
MATH& 153 and MATH& 254
transfer to UW as MATH 126
MATH 238 transfers to UW as MATH 307
MATH 208 and MATH& 254
transfer to UW as a MATH 308

(WSU)
MATH& 151, 152, 153
transfer to WSU as MATH 171, 172
MATH& 254 transfers to WSU as MATH 273
MATH 208 transfers to WSU as MATH 220
MATH 238 transfers to WSU as MATH 315

HUMANITIES & SOCIAL SCIENCE:
The 15 credit minimum must be composed of at least 5 credits of Humanities and 5 credits of Social Science courses.

Recommended Courses:
Humanities: CMST& 220 – Public Speaking
Social Science: ECON& 201, 202 – Micro and Macro

Advising Note: Two years in high school or two quarters in college of a foreign language are required for admission to the UW.

MICELLANEOUS:
CS210 transfers to UW as CSE 142.
CS211 transfers to UW as CSE 143.
ENGL& 235 transfers to UW as TC 231

CHEMISTRY and PHYSICS:
CHEM& 121, PHY& 100 or PHY 114 are good introductory courses for students with no previous background in the subject.

PHYS 121,122,123
transfer to UW as PHYS 121,122,123
transfer to WSU as PHYS 201, 202
CHEM& 161,162,163
transfer to UW as CHEM 142,152,162
transfer to WSU as CHEM 105, 106
CHEM& 261,262,263
transfer to UW as CHEM 237,238,239
transfer to WSU as CHEM 345, 346, 348
BIOL& 211,212,213
transfer to UW as BIOL 180,200,220
transfer to WSU as BIOL 106, 107

ENGINEERING ELECTIVES
Students should customize their choice of ENGR courses to meet the requirements of the engineering departments to which they wish to apply.

ENGR& 114 transfers to UW as ME 123
ENGR& 214 transfers to UW as AA 210
ENGR& 225 transfers to UW as CEE 220
ENGR& 215 transfers to UW as ME 230
ENGR& 224 transfers to UW as ChemE 260
ENGR& 204 transfers to UW as EE 215

ENGR& 114 and ENGR 200
transfer to WSU as ME 104
ENGR& 214 transfers to WSU as CE 211
ENGR& 225 transfers to WSU as CE 215
ENGR& 215 transfers to WSU as ME 212
ENGR& 224 transfers to WSU as ME 301

***Use http://scidiv.bellevuecollege.edu/Engr/links.htm for up to date transferability equivalency information to public and private universities in Washington State.**

Bellevue College - Engineering Course Descriptions

ENGR 110 - Engineering Orientation (2 Credits) Includes lectures, discussions, and reading assignments on the functions of engineering, and the various fields of the profession. Offered on pass/no credit basis only.	ENGR& 214 - Statics (4 Credits) (Previously ENGR 210) Principles of statics, vector algebra, force-couple relationships, equilibrium analysis, structures, area properties, beams and friction. Vector algebra used throughout the course. Prerequisite: PHYS 121 or MATH& 153 or ENGR 111
ENGR& 114 - Engineering Graphics (4 Credits) (Previously ENGR 123) Freehand sketching, lettering, scales, use of instruments, drawing layout, orthographic projection, pictorials, auxiliary views, section views, dimensioning, descriptive geometry, thread and fastener specifications and tolerances. Includes, communication of technical information in engineering design and research and an introduction to computer-aided drafting. Prerequisite: MATH 092 or 099.	ENGR& 225 - Mechanics of Materials (4 Credits) (Previously ENGR 220) Introduces the concepts of stress, deformation and strain in solid materials. Development of basic relationships between loads on structural and machine elements such as rods, shafts, and beams; and the stresses, deflection and load carrying capacity of these elements under tension, compression, torsion, bending and shear forces. Prerequisite: ENGR& 214
ENGR 200 - Computer-Aided Drafting I (3 Credits) Uses a commercial CAD software package to introduce the fundamentals of drawing with a CAD system. Students use drawing and editing commands to create and revise a variety of drawings. Includes description of CAD systems, advantages, applications and operational skills. Prerequisite: ENGR& 114 or permission of instructor.	ENGR& 215 - Dynamics (4 Credits) (Previously ENGR 230) Offers a general treatment of the dynamics of particles and rigid bodies using vector analysis. Kinematics, kinetics, momentum and energy principles for particles and rigid bodies are all considered, as well as, Euler's Equations of Motion. Prerequisite: ENGR& 214.
ENGR& 204 - Electrical Circuits (4 Credits) (Previously ENGR 215) Fundamental concepts of electrical science are introduced. Resistors, sources, capacitors, inductors and operational amplifiers are presented as individual components and as circuit systems. Solution methods using simultaneous algebraic equations and differential equations are applied. Prerequisite: PHYS 122 and MATH 238.	ENGR& 224 - Thermodynamics (4 Credits) (Previously ENGR 260) Introduction to the basic principles of thermodynamics, from a predominately macroscopic point of view. Development of the basic laws of thermodynamics together with application to energy transformations and state changes in engineering problems. Prerequisite: CHEM& 162 and MATH& 152.

Engineering Transfer Course Availability List

PROJECTED ANNUAL COURSE OFFERING – ENGINEERING LIST 2009– 2010
D = Course to be offered during the day. E = Evening offering. O = Online

Course	Quarter: Summer	Fall	Winter	Spring
ENGR 110		D		
ENGR& 114		D	DE	D
ENGR 200				D
ENGR& 204				E
ENGR& 214		E	D	D
ENGR& 225		D	E	D
ENGR& 215			D	E
ENGR& 224		E		D
ENGL& 235	DEO	DEO	DEO	DEO
CS 210		DEO	DEO	DEO
CS 211		DE	DE	DE

	Quarter: Summer	Fall	Winter	Spring
MATH& 141	DE	DEO	DEO	DEO
MATH& 142	DE	DE	DE	DE
MATH& 151	D	DE	DE	DE
MATH& 152	D	DE	DE	DE
MATH& 153	D	D	D	DE
MATH 208		E	D	
MATH 238			E	D
MATH& 254		DE	D	DE
CHEM& 161	D	DE	DE	DE
CHEM& 162	DE	D	DE	DE
CHEM& 163	DE	DE	D	DE
PHYS 121	D	D	DE	E
PHYS 122	E	D	D	DE
PHYS 123	E	E	D	D

Full listing is available at http://bellevuecollege.edu/classes/projected/